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light received from a circle of non-galactic sky one degree in diameter is equivalent to 0.9 the light of a star of the fifth magnitude.

In the second set of plates *Vega* was the comparison-star, and the sky used was a portion of the Milky Way nearest *Vega*. The photometric measurement of these plates gives the light of *Vega* equivalent to that received from an area of galactic sky $5^{\circ} 19' .8$ in diameter. From these two sets we find galactic sky 1.9 times brighter than non-galactic sky, which is also in fair accord with the results obtained by Professor NEWCOMB, but does not agree very well with most persons' general impression of the relative brightness of galactic and non-galactic sky.

As before stated, these results are to be taken as provisional only. It is my intention to carry on the work again next summer, and it is believed that valuable results can now be obtained. I wish to express my obligations to Director CAMPBELL, who kindly placed at my disposal all material and equipment necessary to carry out the experiments.

BERKELEY, CAL., 1902, December 24.

PLANETARY PHENOMENA FOR MARCH AND APRIL, 1903.

BY MALCOLM MCNEILL.

PHASES OF THE MOON, PACIFIC TIME.

First Quarter, March 6, 11 ^h 14 ^m A.M.	First Quarter, April 4, 5 ^h 51 ^m P.M.
Full Moon, " 13, 4 13 A.M.	Full Moon, " 11, 4 18 P.M.
Last Quarter, " 20, 6 8 P.M.	Last Quarter, " 19, 1 30 P.M.
New Moon, " 28, 5 26 P.M.	New Moon, " 27, 5 31 A.M.

The vernal equinox, the time when the Sun crosses the equator from south to north and spring begins, occurs March 21st, 11 A.M., Pacific time.

There will be two eclipses during the period March-April. The first is an annular eclipse of the Sun, on March 28th. The

path of the central eclipse begins in middle Asia and runs northwest, ending in the Arctic Ocean north of Alaska. The eclipse may be seen as a partial one in the eastern part of Asia and the northwestern portions of North America. It will not be visible in the United States in general.

The second is a partial eclipse of the Moon on the evening of April 11th. Although the Moon leaves the penumbra at 7 P. M., Pacific time, it leaves the shadow more than an hour earlier; so the eclipse will not be a noticeable phenomenon in the extreme western portions of the country, but it will be well seen in the eastern portions during the early evening. The eclipse is almost total, less than three per cent of the Moon's diameter being uncovered during the middle of the eclipse, which occurs at $7^{\text{h}}\ 13^{\text{m}}$ Eastern time.

Mercury is a morning star during March and until April 10th, when it reaches superior conjunction with the Sun and becomes an evening star. For the first ten days or so of March it rises an hour or more before sunrise, and may be seen in the early morning twilight under good weather conditions. After passing conjunction its distance from the Sun rapidly increases, and toward the end of the month it is well out toward greatest east elongation. It may be seen as an evening star toward the end of the month, and on May 1st it remains above the horizon $1^{\text{h}}\ 40^{\text{m}}$ after sunset.

Venus is an evening star, and increases its distance from the Sun about 16° in their common eastward motion. On March 1st it remains above the horizon a little less than two hours after sunset, and by the end of April this interval has increased to more than three hours, and the planet does not set until nearly 10 p. m. It will be very conspicuous in the western sky in the evening, but not nearly so bright as it is when near inferior conjunction.

Mars will be the most interesting astronomical object during the present period. It comes to opposition on the night of March 28-29th, and during the whole March-April period it remains above the horizon nearly the entire night. It is brighter than it has been since the opposition of February, 1901, or will be again until the spring of 1905. At the time of opposition its distance from the Earth is a little less than sixty millions of miles. On account of the great eccentricity of

Mars's orbit, the nearest approach to the Earth varies greatly at different oppositions. It will be nearer to us by about four million miles at the present opposition than it was at the opposition of 1901; and the oppositions of 1905 and 1907 will be still better. The motion of the planet among the stars during the two-months period is retrograde about 19° , from a position in *Virgo* not far from *Spica*, the brightest star of the constellation, to a point in *Leo* not far from *Denebola*, the second star of the latter constellation.

Jupiter is a morning star, having passed conjunction with the Sun on February 19th. It rises at about $6^{\text{h}}\ 30^{\text{m}}$ on March 1st, and at about 3 A. M. on April 30th. It is rather too near the Sun to be seen during the early days of March, but soon begins to show in the early morning twilight, and is the brightest object in the eastern part of the morning heavens. It is in conjunction with *Mercury* on the afternoon of March 18th. *Jupiter's* superior brightness will enable it to be seen in the morning twilight, but *Mercury* is so much fainter that it will not be easy to see it in its position, about three Moon's diameters south of *Jupiter*. *Jupiter* is in the constellation *Aquarius*, and moves 13° eastward and northward during March and April.

Saturn is also a morning star, and rises at about 5 o'clock on March 1st. By the end of April it rises shortly after 1 o'clock. As it is much less bright than *Jupiter*, it is not very conspicuous during the early days of March. It is in the constellation *Capricorn*, and during the two-months period moves about 5° eastward and northward.

Uranus rises at about half-past 2 o'clock on March 1st, and at about half after 10 at the end of April. It moves slowly eastward among the stars during March, and then retrogrades during April; but the whole motion is confined to a space about equal to the Moon's diameter. It is still in the southern extension of *Ophiuchus*, and no bright star is near enough to afford an easy means of identification.

Neptune is in *Gemini*. By the end of April it sets at about 11 P. M.

(FORTY-FIRST) AWARD OF THE DONOHOE
COMET-MEDAL.

The Comet-Medal of the Astronomical Society of the Pacific has been awarded to WILLIAM R. BROOKS, Director of Smith Observatory, Geneva, New York, for his discovery of an unexpected comet on April 14, 1902.

The Committee on the Comet-Medal:

W. W. CAMPBELL,
CHAS. BURCKHALTER,
WM. M. PIERSON.

(FORTY-SECOND) AWARD OF THE DONOHOE
COMET-MEDAL.

The Comet-Medal of the Astronomical Society of the Pacific has been awarded to Professor CHARLES D. PERRINE, of the Lick Observatory, for his discovery of an unexpected comet on September 1, 1902.

The Committee on the Comet Medal:

W. W. CAMPBELL,
CHAS. BURCKHALTER,
WM. M. PIERSON.
